

**CLAIMS**

Claims 1 to 35. (Canceled)

36. (Original) A vehicle light source comprising:  
a replaceable lamp capsule having a support, a plurality of LEDs mounted on the support, wherein the support is made from material having a high thermal conductivity to conduct heat away from the plurality of LEDs, and wherein the support includes a base structure having a thermally conductive connection to a heat sink.
37. (Original) The vehicle light source in claim 36, wherein the connection is to an attached spacially extended heat radiator forming a portion of the vehicle lamp.
38. (Original) The vehicle light source in claim 37, wherein the heat radiator is a flange.
39. (Original) The vehicle light source in claim 37, where in the heat radiator includes cooling fins.
40. (Original) The vehicle light source in claim 37, wherein the connection is a thermally conductive coupling to a thermally conductive portion of a vehicle.
41. (Original) A vehicle light source comprising:  
a replaceable lamp capsule having a support defining an axial direction,  
a disk forming a portion of the support, and  
a plurality of LEDs mounted circumferentially on the disk.

42. (Original) The vehicle light source in claim 41, wherein each LED has a predominate LED axis of light emission, the majority of the LEDs being oriented so the respective LED axes form an angle with respect to the forward lamp axis direction of ninety or more degrees.
43. (Original) The vehicle light source in claim 36, wherein the LEDs are mounted in a plurality of bands extending around the support.
44. (Original) The vehicle light source in claim 36, wherein the LEDs are arranged in a plurality of separate circuits coupled to separate inputs enabling alternative light outputs.
45. (Original) A vehicle light assembly comprising:
  - a) a replaceable lamp capsule having a support defining a lamp axis extending in a forward direction towards a field to be illuminated, one or more LEDs mounted on the support, each LED having a predominate LED axis of light emission, the majority of the LEDs being oriented so the respective LED axes form an angle with respect to the forward lamp axis direction of ninety or more degrees;
  - b) a reflector having reflective surface formed with a rear opening to receive the LEDs of the lamp capsule therethrough, the reflector further having a height measured along an axis of the reflector and a maximal diameter measured transverse to the axis, wherein the reflector is offset from and oriented with respect to a majority of the LEDs to intercept the LED axes, and reflect light emitted from the LEDs generally in the forward direction to the field to be illuminated,
  - c) wherein the ratio of the reflector diameter to the reflector height is more than 1.0, and
  - d) wherein the reflector height is less than 5.0 centimeters.

46. (Original) The vehicle light assembly in claim 45, further including a lens enclosing the lamp capsule in the reflector, wherein the reflector and lens assembly has an interior axial measurement from an inner face of the lens to an transverse plane intersecting the reflector at the formed opening of less than 4.0 centimeters.
47. (Original) A vehicle light assembly of claim 45, further including a coupling to mount the lamp in an indentation formed in a vehicle hull.
48. (Original) The vehicle light source in claim 36, wherein the support is substantially cylindrical.
49. (Original) The vehicle light source in claim 48, wherein the support includes a thermally conductive base with a heat conductive flange and a coupling to press the flange to a thermally conductive portion of a vehicle hull.
50. (Original) The vehicle light source in claim 36, wherein the LEDs are supported on an intermediate flexible substrate, and the flexible substrate is bent to conform with the exterior contour of the support, the flexible substrate being mechanically coupled to the support.
51. (Original) The vehicle light source in claim 50, wherein for flexible substrate is thermally coupled to the support for heat conduction from LEDs through the flexible substrate to the support.
52. (Original) The vehicle light source in claim 50, wherein the flexible substrate is supported in a groove formed on the support.

53. (Original) The vehicle light source in claim 50, wherein the LEDs are supported respectively on spoke portions of a flexible hub and spokes structure.
54. (Original) The vehicle light source in claim 53, wherein the hub and spoke structure provides an electrical connection in the hub portion.
55. (Original) The vehicle light source in claim 36, wherein the support includes an umbrella like head portion, and the LEDs are mounted with the head portion positioned substantially intermediate the LEDs and the field to be illuminated.
56. (Original) The vehicle light source in claim 53, wherein the support includes a lower sidewall including a reflective skirt directing light from the LEDs away from the support.
57. (Original) A vehicle light source comprising:  
a lamp capsule having a support, wherein the support includes an umbrella like head portion,  
a plurality of LEDs mounted on the support, and positioned with respect to the head portion so that the head portion is substantially intermediate the LEDs and the field to be illuminated, wherein the support is made from material having a high thermal conductivity to conduct heat away from the plurality of LEDs.
58. (Original) A vehicle light assembly comprising:  
a lamp capsule having a support, wherein the support includes an umbrella like head portion,  
a plurality of LEDs mounted on the support, and positioned with respect to the head portion so that the head portion is substantially intermediate the LEDs

and the field to be illuminated, thereby substantially blocking direct view of the LEDs, wherein the support is made from material having a high thermal conductivity to conduct heat away from the plurality of LEDs, wherein the support defines a lamp axis extending in a forward direction towards a field to be illuminated, and the plurality of LEDs mounted on the support each LED have a predominate LED axis of light emission, the majority of the LEDs being oriented so the respective LED axes form an angle with respect to the forward lamp axis direction of ninety or more degrees; and  
a reflector having reflective surface formed with a rear opening to receive the LEDs of the lamp capsule there through, the reflector further having a height measured along an axis of the reflector and a maximal diameter measured transverse to the axis, wherein the reflector is offset from and oriented with respect to a majority of the LEDs to intercept the LED axes, and reflect light emitted from the LEDs generally in the forward direction to the field to be illuminated.

59. (Original) The vehicle light assembly in claim 58, wherein the support includes a lower sidewall including a reflective skirt directing light from the LEDs away from the support.
60. (Original) A vehicle light source comprising:  
a replaceable lamp capsule having a support including formed indented wells, a plurality of LEDs mounted respectively in the indented wells, wherein the support is made from material having a high thermal conductivity to conduct heat away from the plurality of LEDs.

61. (New) A low-power high-intensity lighting apparatus, comprising:
- a housing including a curved reflector;
  - a lamp base mounted in said housing;
  - a lamp unit mounted on said lamp base, said lamp unit including at least one light emitting diode and generating light that propagates rearwardly toward said reflector and that is reflected forwardly by said reflector;
  - wherein said reflector has a concave reflective surface with an intermediate part, said lamp base being mounted to said reflector at said intermediate part of said concave reflective surface;
  - wherein said intermediate part of said intermediate part of said concave reflective surface is formed with an internally threaded mounting hole, said lamp base including a coupling post having an externally threaded end that engages said reflector in said mounting hole;
  - wherein said lamp base further includes a cap having a base wall portion, a surrounding wall portion extending from said base wall portion, and a post engaging portion extending from said surrounding wall portion for engaging one end of said coupling post opposite said externally threaded end.
62. (New) The low-power high-intensity lighting apparatus as claimed in claim 1, wherein said reflector has an open front end, said housing further including a light-transmissive cover mounted on said reflector at said open front end.
63. (New) A light source comprising:
- a concave reflector having an intermediate portion;
  - a mounting post with a first end fixed to said intermediate portion and extending away therefrom; and

Applicant: English, et al.  
Serial No.: 10/646,916  
Filed: 08/22/2003  
For: Replaceable LED Lamp Capsule

Art Unit: 2857  
Examiner: Cariaso, Alan B.

Page 8 of 14

a lamp unit mounted to a second end of said mounting post, said lamp unit comprising at least one light emitting diode directing light toward said concave reflector.

64. (New) The light source of Claim 63 wherein said intermediate portion contains an internally threaded aperture and said first end of said mounting post has a matching, externally threaded portion for engagement with said internally threaded portion.